

R E M A R K S

The office action of June 29, 2007, has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1-4, 12-38 and 47 remain in this case.

Preliminary Comments

- a. Claim 15 was amended to address the problem raised in the objection.
- b. The Examiner's attention is drawn to the fact that submitted herewith is Applicant's Declaration under 37 C.F.R. § 1.131 and Exhibits A-G, providing evidence showing that the date of invention was prior to the filing date of Rappold US Published Application number 2004/0117397.
- c. The numbered paragraphs below correspond to the numbered paragraphs in the Office Action.

Summary of Interview

On Monday, October 22, 2007, Applicant Hubert Lobo, Applicant's Attorney Michael Brown and Examiner Kim Lovell had a telephone interview. The substance of the interview was as follows:

- The parties discussed what evidence would be acceptable as facts to prove reduction to practice, in order to resolve the problems expressed by the Examiner with the 131 affidavit supplied with the previous office action.
- The Rappold reference was discussed, particularly referring to the database structure as shown in figures 4 and 5. Applicant's attorney stated that while Rappold has metadata in figure 4 describing the data in figure 5, it lacks the "metadata on metadata" of the present invention. The Examiner requested that the arguments presented by Applicant and Applicant's attorney be filed with this response. Those arguments are presented in detail below.

Claim Objection

20. Claim 15 was objected to because it recited "a result database" in line 18 and "a test result database" in line 20.

Claim 15 has been amended to change "a result database" in line 18 into "a test result database", and to change "a" to --the-- in line 20. This removes the problem that the Examiner was objecting to, and is consistent with the same language in claim 1. Reconsideration and withdrawal of the objection is respectfully requested.

Rejection(s) under 35 U.S.C. §103

23. The prior art rejections of all of the remaining claims under 35 U.S.C. 103(a) were maintained from the previous office action. Specifically, claims 1-4 and 12-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rappold, III (US PGPub 2004/0117397) in view of Arritt et al. (US PGPub 2005/0131861) and further in view of the dissertation titled "Pulsed DC Reactive Magnetron Sputtering of Aluminum Nitride Thin Films" by Jung Won Cho.

24. Claims 15-19, 21-26, 28-30, 34-38, and 47 were rejected under 35 U.S.C. 103(a) as being unpatentable over the above references in further view of Boyd et al.(US PGP 2003/0069795).

25. Claim 20 was rejected under 35 U.S.C. 103(a) as being unpatentable over the all of the above in further view of Markki et al. (US PGPub 2004/0243580).

26. Lastly, claims 27, and 31-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over the references cited above in the rejection of claim 15 in further view of O'Hare et al. (US 6,484,173).

Applicant hereby submits a Declaration under 37 C.F.R. §1.131 and Exhibits A-F providing evidence showing that the date of invention was prior to the filing date of Rappold (December 16, 2002), and also Markki (May 27, 2003).

The Declaration shows that the invention was conceived at least as early as May 30, 2002, and implementation of an embodiment of the invention began in June 2002, with a first working version produced at least as early as August 20, 2002 (unpopulated repository) or September 19, 2002 (repository populated with test data by a data provider and owner), with a test deployment of a working system at least as early as October 22 of that year.

It is respectfully submitted that the rejection is overcome by Applicant's Declaration under 37 C.F.R. § 1.131, submitted herewith, providing evidence showing that Applicant's date of invention is prior to the filing dates of Rappold and Markki. Since the Applicant's date of invention is prior to these references, they are not available as prior art over the present invention under 35 U.S.C. § 103(a). With those references removed from consideration, Applicant believes that the present invention is not rendered obvious over the remaining references (Arritt and Cho, as well as Boyd), for the reasons expressed in the prior Office Action responses and the interviews with the Examiner on October 26, 2006, November 6, 2006 and October 22, 2007.

As stated above, Applicants believe that Rappold, the base reference for all of the obviousness rejections, should not be available as a reference due to Applicants' prior invention as evidenced in the attached section 131 affidavit. However, Applicants' also believe that even if Rappold were available as a reference, the claimed invention is still patentable over the reference for the reasons stated in the prior office action responses, which are included herein by reference.

Additional Arguments as presented at the October 22, 2007 Interview

At the October 22, 2007, interview, Applicant's attorney explained why Rappold does not show the claimed invention. This argument is presented herein, as follows.

Neither Rappold's application nor the other cited references discloses or teaches the novel "metadata on metadata" feature of the invention claimed in independent claims 1 and 15 of the present application.

Claim 1 reads, in pertinent part:

1. ... a repository of material property data, said data comprising a plurality of materials property datasets each dataset being associated with a sample of a material and a test on the sample of the material, each dataset comprising:

a) a metadata database ... comprising:

i) *metadata on the material;*

ii) *metadata on the sample;*

iii) *metadata on the test; and*

iv) metadata on data value elements in a test result database; and

b) the test result database comprising a plurality of instances having associated metadata in the metadata database ...

wherein the metadata in the metadata database define the instances in the metadata database and the instances of test result information in the test result database, and ... [italics added]

Rappold is a database system, using metadata in a metadata table (figure 4) to define instances in a data table (figure 5). For illustration in the following discussion, figure 4 and part of figure 5 are reproduced here:

FIG. 4

401a	1	:	FIRST	:	STRING
401b	2	:	MIDDLE	:	STRING
401c	3	:	LAST	:	STRING
401d	4	:	USERNAME	:	STRING
401e	[5]	:	EXTENSION	:	STRING

411e ← 411 413e ← 413 415e

FIG. 5

510	512	514	516
500a	121	81	1
500b	122	81	2
500c	123	81	3
500d	124	81	4
500e	125	92	1
500f	126	92	3
500g	127	92	4
500h	128	93	1

Rappold's system is shown as a simple database (presumably of computer users), with instances in the data table for the users' first, middle and last name, username and phone extension. The metadata defining the data value elements for these instances is given in the metadata table - that is, the first name is field number 1, it is named "first", and the field is a string (all of Rappold's fields are strings).

The data table (50) in Rappold's system corresponds to the test result database in Applicants' invention (claim 1(b), or claim 15(a)(iv)(b)), in that each of the instances in the data table is information about a user (analogous to one of a material, sample or test) comprising a data element identifying the user (material, sample or test) and a data value element, which in all cases in Rappold is a single data point. The instances in the metadata table (41) in Rappold correspond to only one part of the metadata database in Applicants' invention - that is, the "metadata on data value elements in a test result database" as claimed in claim 1(a)(iv) or claim 15(a)(iv)(a)(4).

What is missing from Rappold (and Arritt, Cho, Boyd, Markki, O'Hare and all other references cited or known to Applicants) is the "metadata on metadata" feature, claimed in the italicized parts of claim 1, above - that is, (1)(a)(i) *metadata on the material*; (ii) *metadata on the sample* and (iii) *metadata on the test* and the italicized portion of the "wherein" clause - "*wherein the metadata in the metadata database define the instances in the metadata database*".

It is understood that Rappold's system is not a materials test repository and method as described and claimed in the present application, so that this discussion will, of necessity, have to relate parts in Rappold to the current invention by analogy, re-inventing Rappold in hindsight given Applicants' disclosure. By making this analogy, Applicants are not admitting that such a re-invention is taught or suggested in the prior art in any way.

With that reservation given, what would Rappold's system look like if it *did* include the "metadata on metadata"? Such metadata on metadata would be used to define another level of abstraction above that shown in Rappold - that is, the metadata would be used to define a plurality of entities other than the single level of abstraction in the system shown (i.e. information about users). What might this be?

We suggest that a "reinvented" Rappold database designed analogously to Applicants' invention might be a facility and employee management system including information about users, the computer systems the users use, and the buildings in which they have their offices.

In such a case, the metadata table (fig. 4) in Rappold might have looked like this:

1	FIRST	STRING	Metadata on data elements in the data table defining a user (from Rappold application)
2	MIDDLE	STRING	
3	LAST	STRING	
4	USERNAME	STRING	
5	EXTENSION	STRING	
6	USER	FIRST, MIDDLE, LAST, USERNAME, EXTENSION	Metadata on metadata defining a user (from the Rappold application's table)
7	COMPUTER	NAME, IP ADDRESS, OPSYS, SPEED	Metadata on metadata - defines a "computer"
8	BUILDING	ADDRESS, LAT, LON, SQFOOT, PICTURE, ENERGY	Metadata on metadata -defines a "building"
9	NAME	STRING	Metadata on the data elements in data table defining a computer
10	IP ADDRESS	IPFORMAT	
11	OPSYS	STRING	
12	SPEED	FLOATING, MFlops	
13	ADDRESS	STRING	Metadata on the data elements in data table defining a building
14	LAT	FIXED: xxx.xxxx, degrees	
15	Lon	FIXED: xxx.xxxx, degrees	
16	SQFOOT	FLOATING, square feet	
17	PICTURE	PICTURE, JPG	
18	ENERGY	TGRAPH	Metadata on metadata - defining data type "IPFORMAT"
19	IPFORMAT	Four integers, each less than 256, separated by periods	
20	TGRAPH	Bar graph, "X" axis is energy usage in kilowatts, "Y" axis is time ...	Metadata on metadata - defining data type "TGRAPH"
21

This illustrates how Applicants' "metadata on metadata" concept might have been incorporated into a system like Rappold's - which it was not. The added metadata on metadata define both a higher-level concept (users, computers, buildings), but also define lower level elements (data format types IPFORMAT and TGRAPH).

Thus, the metadata on metadata concept allows for expansion of the data repository by adding metadata on metadata and metadata on data elements. For example, should a new higher-level entity be needed - say, a vehicle - it would merely be necessary to add metadata defining the metadata for a vehicle:

22	VEHICLE	MAKE, MODELYEAR, BOUGHT, MILES	Metadata on metadata - defines a "vehicle"
23	MAKE	MTABLE	Metadata on the data elements in data table defining a vehicle
24	MODELYEAR	INTEGER: range 1950-2020	
25	BOUGHT	DATE	
26	MILES	FLOATING	
27	MTABLE	"n x n" data array of possible makes and models of vehicles, each entry a string	Metadata on metadata - defining data type "MTABLE"

In this example, we not only have added a new entity (vehicle), but also a new type of data to describe vehicles (MTABLE). This ability to have metadata on metadata facilitates expansion of the repository.

Neither Rappold, nor Arritt, nor Cho, nor Makki, nor O'Hare teach, show or suggest the Applicants' metadata on metadata feature as used in a data repository for material property data. Therefore, the combination of the references cannot supply which every one of them lacks.

Reconsideration and withdrawal of the obviousness rejection of claims 1-4, 11-38, 41-42, and 47 are therefore respectfully requested.

Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, she is invited to telephone the undersigned at the number given below.

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